
CalMTA
December 1, 2023
Day 2:
Market Transformation
Advisory Board (MTAB)
Meeting

1
Welcome & Agenda

Agenda Day 2

Time	Agenda Item	Presenter
9:00 a.m.	1. Welcome & Agenda	Stacey Hobart
9:05 a.m.	2. Discuss Overall Portfolio Characteristics	Jeff Mitchell
9:45 a.m.	3. ESJ Listening Sessions Report Out	Rachel Good
10:00 a.m.	4. Update on Draft MTI Evaluation Framework	Karen Horkitz
11:00 a.m.	5. Public Comment	
11:15 a.m.	Break (15 min)	
11:30 a.m.	6. Advancement Plan: Portable Heat Pump	Elaine Miller
12:15 a.m.	7. Advancement Plan: Induction Cooktop	Elaine Miller
1:00 p.m.	Lunch (50 min)	

Time	Agenda Item	Presenter
1:50 p.m.	8. Advancement Plan: Efficient Rooftop Units	Alexis Allan
2:35 p.m.	9. Future MTAB Meetings & Topics	Lynette Curthoys
2:40 p.m.	10. MTAB Recruitment schedule	Stacey Hobart
2:50 p.m.	11. Public Comment	
3:00 p.m.	Adjourn	

Phone participants can raise their hand during the public comment period and will be unmuted.

2

Portfolio Discussion

Jeff Mitchell

Principal, Market Transformation

Portfolio Characteristics

Portfolio Characteristic	Key Portfolio Question	Flags
MTI Diversity	Is there sufficient balance and coverage across market sectors, end uses, and technologies? Do the initiatives' potential benefits sufficiently cover California?	Urban/rural, statewide, or IOU service territory
Ramp Rate/Timing	How quickly will impacts accrue?	Long, med, short
ESJ Relevance	Does the portfolio sufficiently address equity?	High, medium or null
WE&T Support	Does the portfolio sufficiently address WE&T?	High, medium or null
Risk Profile	Is the risk profile of the portfolio acceptable?	
Investment Required	What mix of MTIs optimizes the portfolio budget?	Incentive requirements, estimated years in market, etc
Policy Alignment	Does the portfolio align with California's clean energy and climate goals?	• GHG • Low GWP refrigerants • Grid flexibility • Indoor air quality

Idea #	Program Name	Rank Orde	Batc	Geographic Sector Diversity	Technology Diversity	Sector	Ramp Rate/Timing	ESJ	WE&T	Investment Required - Low	Investment Required - Hig
97	Portable Heat Pumps		1	SW	HVAC/HP	Res	Short	High		$46,535,320	$ 66,535,320
171	Residential Variable Speed Heat Pump	1	2	SW	HVAC/HP	Res	Med		High	$51,762,000	$ 75,762,000
85	Combi Heat Pump	7	3	SW	HVAC & WH	Res	Long		High	$50,218,500	$ 57,718,500
21	Bi-directional EV Charging - Residential			SW	PLA	Res	Med	Med	Med	$34,412,165	$ 37,365,915
165	Foodservice Decarbonization	6	3	SW	Food Svc	Comm	Long	Med		$68,471,850	$ 118,471,850
116	RTUs		1	SW	HVAC	Comm	Med		High	$32,058,000	$ 47,058,000
194	Heat Pump Water Heater	3	2	SW	WH/HP	Res	Short	High	High	$46,092,000	$ 46,092,000
193	Building Performance Standards Accelerator MTI			SW	Comm / Policy	Comm/MF	Low		High	$54,192,600	$ 54,192,600
10	High Performance Windows	4	2	SW	Env	Res	Med	Med		$15,437,849	$ 23,640,349
68	AC must be HP	8		SW	HVAC/HP	Res	Low		Med	$ 5,564,419	$ 5,564,419
157	Single Pane Retrofit	5	3	SW	Env	Comm	Long	Med	High	$23,573,500	$ 43,573,500
107	Induction Cooking		1	SW	PLA	Res	Short	High		$26,496,000	$ 26,496,000
105	Streetlight Efficiency	2	2	SW	Ltg	Muni	Med	Med		$ 9,177,000	$ 9,177,000
80	Smart Electric Panel			SW	PLA	Res	Med		High	$41,511,000	$ 56,511,000
149	Modernizing building automation system hardware to use standardized controls			SW	HVAC	Comm	Med		High	$25,981,000	$ 30,981,000

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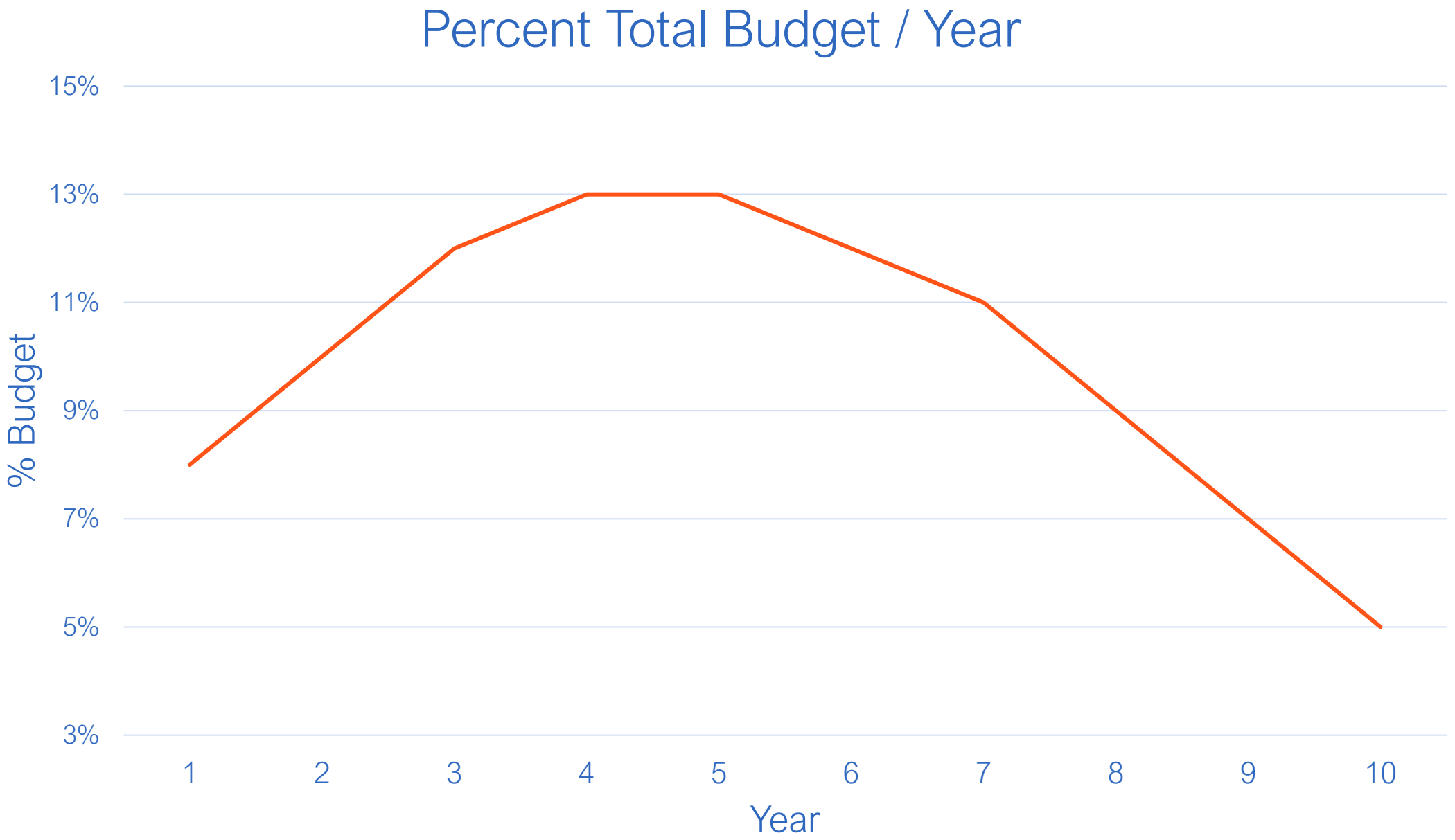
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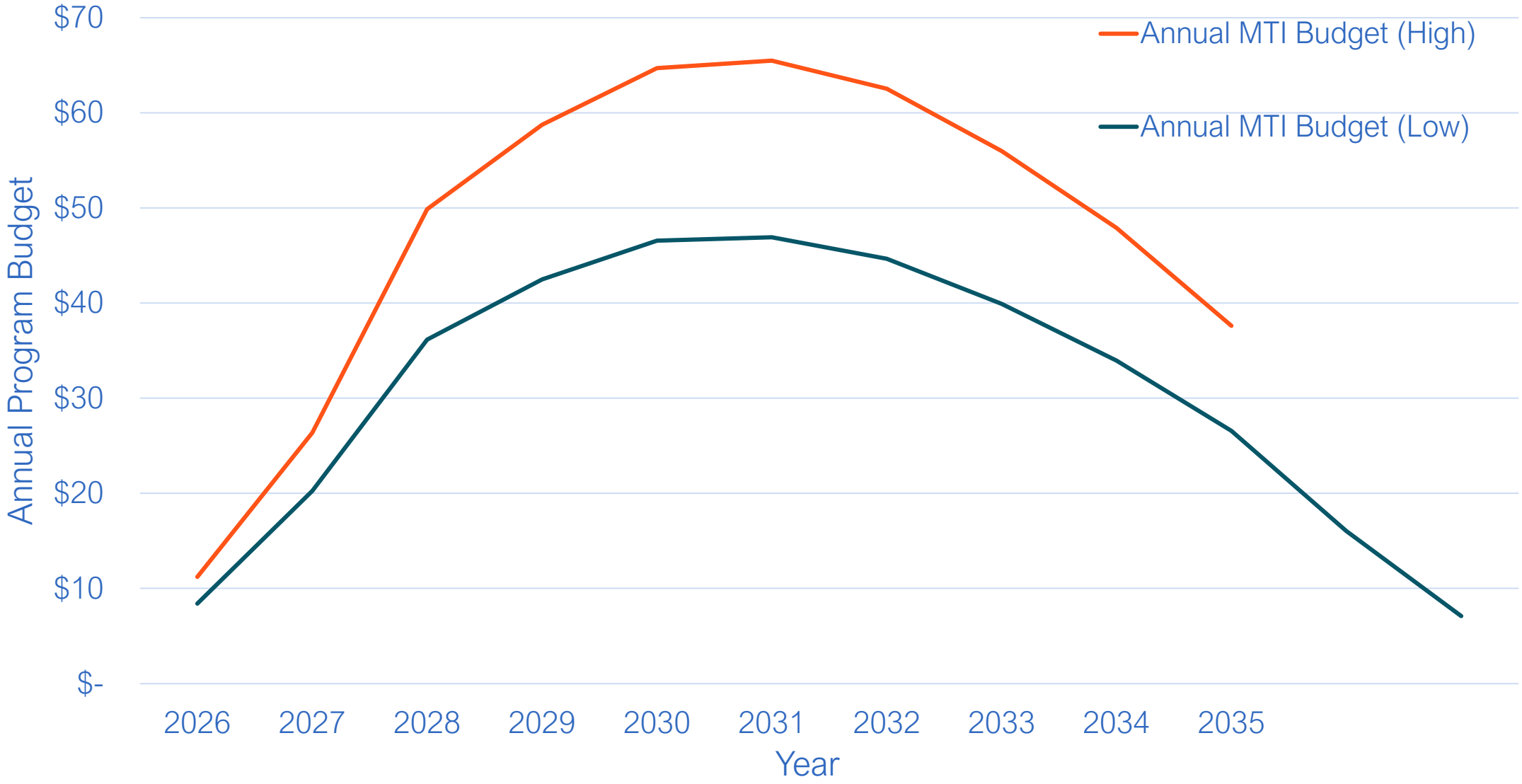
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Annual Program Budget
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2031
2032
2033
2034
2035
Year
Annual MTI Budget (High)
Annual MTI Budget (Low)

3
ESJ Listening Sessions

Rachel Good

Stakeholder Engagement Manger

Listening to ESJ Communities

- **Facilitated listening sessions led by Unrooz Solutions and The Ortiz Group** to:
  - Build trust among ESJ communities
  - Better understand market barriers and opportunities
  - Maximize MTI benefits to these communities
- **Five 90-min sessions held Nov. 1-8** on innovation & technology and workforce development
- Attended by **25+ organizations working with ESJ communities** across California

Key Takeaways: Innovation & Technology

Trusted channels like CBOs are the best source of information but need to be leveraged respectfully.

Culturally sensitive hands-on education will be needed to build confidence in newer EE technologies.

Grid resilience concerns due to rolling blackouts/power outages can pose a barrier to home electrification.

Suboptimal housing stock requires whole-home upgrades/wraparound services to maximize the benefits of EE technologies.

Key Takeaways: Workforce Development

WE&T efforts must navigate structural barriers to effectively engage community members.

Wraparound services increase accessibility: transportation/childcare assistance, stipends, basic skills training, and mental health support.

EE training and education must connect participants to **long-term, high-quality job opportunities**.

Follow-Up Action

- Survey distributed to all participants
  - **76% rated their experience as “very positive”**
  - **88% said they were “very interested” in participating** in future CalMTA listening sessions
- Session transcripts reviewed and analyzed with help from Cadmus to identify key takeaways
- **Summary report to be published on website and shared with participants** and other key stakeholders by Dec. 20

Direct Feedback

“I appreciated the framing for the session and the opportunity to share in an inclusive space.”

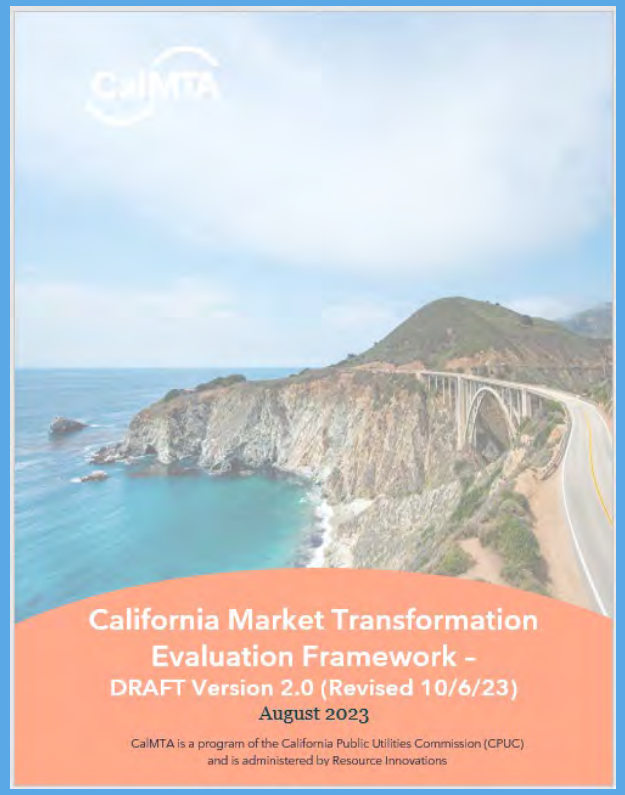
“Feedback from multiple participating sources and organizations not only allows for CalMTA to benefit, but I'm also sure the different participants also benefit.”

"[I valued] insights into issues with electrification such as educating customers, purchasing restrictions, and the need for specific cookware."

4
Update on Draft MTI Evaluation Framework

Karen Horkitz

Senior Advisor, Market Transformation



Comments Overview

- 5 comment documents posted to PDA website (Cal Advocates, Codes & Standards team, NEEA, NBI, SoCalGas)
- MTAB comments (Fred Gordon – evaluation independence and transparency)
- Key Topics
  - Incremental Impact/Attribution: Codes & Standards
  - Incremental Impact/Attribution: MTIs and RA Programs
  - Evaluation Oversight
- Other Topics
  - Importance of market progress evaluation, co-created savings, evaluation of equity
  - Clarifications, terminology, miscellaneous edits

Comments – Incremental Impact/Attribution

Topic	Comment	Source	CalMTA Response
Attribution – MTIs and Resource Acquisitions	Adopt option 2 (collaborate with individual PAs to develop approaches to be reviewed by an IRC)	Cal Advocates	• CalMTA continues to recommend option 1 (subtract verified RA savings) • Clarify that the proposed method does not allow MTIs to claim savings from all other market influences because those are included in BMA.
Incremental Impact – C&S	Adopt/don't dismiss Option 1 (3X rule) All MTIs have shared adoption targets with the C&S program	Cal Advocates; C&S	• Recommend Option 1 (3X Rule) as provisional approach, pending additional analysis to better understand implications • Remove "no overlap" language from framework; this will work itself out during Phase II forecasting, as we collaborate with the C&S team

Comments – Evaluation Oversight

Topic	Comment	Source	CalMTA Response
EM&V Oversight	• ED should oversee solicitation/hiring of 3rd-party independent evaluators • Please clarify statement on p.1 of framework regarding CalMTA oversight*	Cal Advocates; C&S	Proposed approach to ensure independence of 3rd party evaluation: • Evaluation function (Cadmus) does not report to MTI program management • Form selection committee for 3rd party evaluators, including ED representative, Cadmus, and at least one other independent MT evaluation expert • ED approves all contracts above $150K • Evaluation lead (Cadmus) includes ED representative in all substantive communications with 3rd party evaluator • Regular, periodic stakeholder update meetings starting 4th quarter 2024 • Evaluator has last word on reports; all reports published

** CalMTA will oversee implementation of rigorous and strategically focused evaluation, measurement, and verification (EM&V) practices, which will enable management and stakeholders to gauge the performance of CalMTA and MTIs, verify incremental impacts, and improve the design and success of future MTIs*

Evaluation Activities, Deliverables and Roles, by MTI Lifecycle Stage

	Phase I. Concept Development	Phase II. Program Development	Phase III. Market Deployment
EM&V Activities	• Review and clarify MTI documentation • Identify research/ measurement gaps • Develop preliminary logic model	• Ensure stakeholder alignment with MTI goals and MPIs • Develop market adoption and cost-effectiveness forecast • Characterize baseline market conditions • Develop workpapers; conduct technology assessment studies (as needed) • Refine logic model • Develop evaluation plan • Evaluate market pilots (as needed)	• Collect and compile market data from market partners • **Refine evaluation plan** • **Evaluate market progress and causal influence** • **Review cost-effectiveness model assumptions** • Update model and refine forecasts and estimated impacts
Deliverables	• Preliminary research plan	• Baseline market adoption forecast • Impact and cost-effectiveness forecast • Market characterization study report • Technology Assessment workpapers/reports	• **Market Progress Evaluation Reports** • MTI impact reporting

Grey denotes CalMTA activities
Blue denotes independent third-party evaluator activities
Orange denotes shared CalMTA and third-party evaluator activities

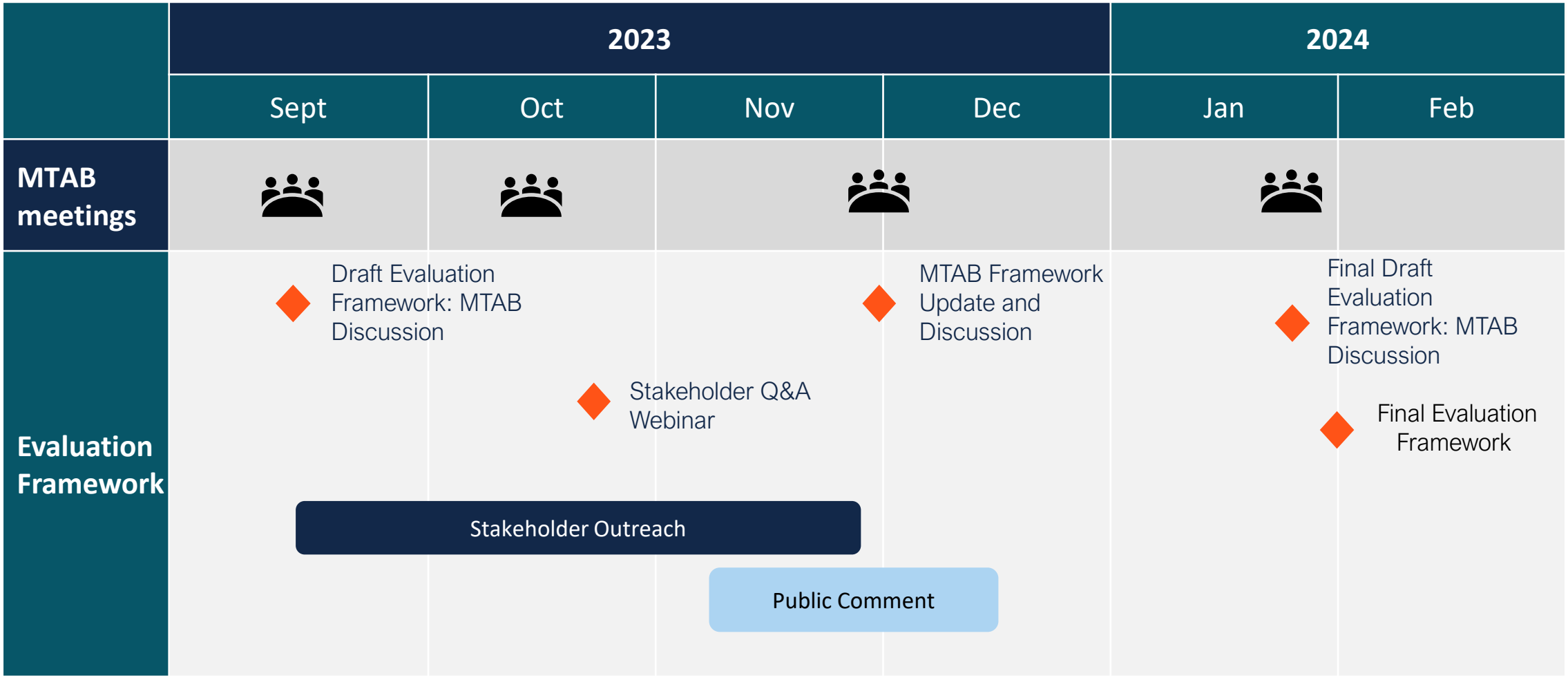
Framework Comments – Other (in Scope)

Topic	Comment	Source	CalMTA Response
Importance of Market Progress Evaluation	Should be regarded with equal importance to savings	NEEA	Acknowledge more explicitly in text
Co-Created Savings	NEEA supports attribution approach 3, which brings in the concept of co-created impacts	NEEA	CalMTA will report co-created savings but will use the RA subtraction method to calculate C/E
Acknowledgement of CA Policy Goals/ Metrics	Equity not mentioned	NBI	Acknowledge more explicitly in text
Clarifications	Proposed approach gives CalMTA attribution for adoption due to policy; does BMA include utility program impacts?	C&S; Cal Advocates	Clarify: BMA includes adoption from other (non-utility) market influences; does not include utility program impacts
Standardize Terminology		Cal Advocates; NBI	Add glossary of terms; re-edit
Other Corrections/ Typos		Cal Advocates; C&S	We will address these

Framework Comments – Other (out of Scope)

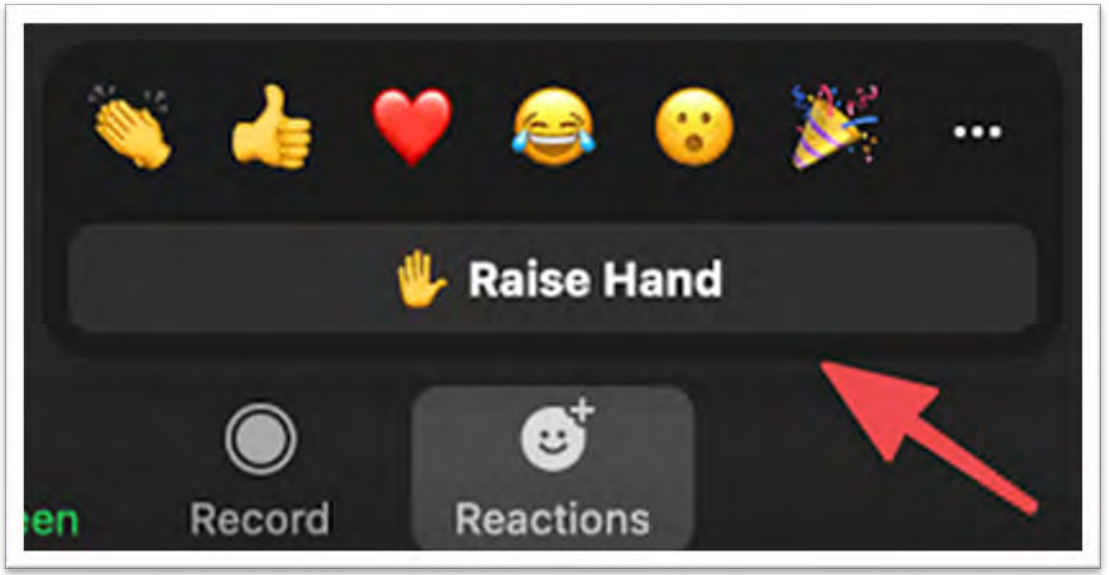
Topic	Comment	Source	CalMTA Response
MTA 5-Year Review	Include in framework	C&S	Out of framework doc scope Rename to “MTI Evaluation Framework”
Incremental Impact	More detailed curves to conceptually illustrate attribution to various programs; different shapes (e.g., to show C&S step function)	C&S	Curves in the framework are meant to be conceptual. Refining them to reflect other programs goes beyond CalMTA scope.
Baseline Revision	Will MTAB have input on baseline revision?	C&S	MTAB advice is welcomed on all matters. Note – we received no comments on BMA revision guidelines in the framework.
Standard MT Evaluation Practice	Single approach to MT evaluation across PAs	C&S	This is not within CalMTA scope
MTI Selection Process	Greater transparency; use experts and MTAB	SoCalGas	NA to evaluation framework, but will reach out

Evaluation Framework Finalization Timeline



Public Comment

Raise your hand using the “Reactions” feature and we will allow you to unmute yourself.



Break (15 min)
We will be back soon.

6
Advancement Plan: Portable Heat Pump
(45 minutes)

Elaine Miller

Senior Manager, Market Transformation Strategy

What we will cover

- Summary of advancement plans for first batch MTIs
- MTIs adapted since last MTAB meeting
- For each we will review the following:
  - Product definition
  - Target market and possible leverage points
  - Conceptual logic model elements
  - Summary of external program review
  - Research to be conducted in the next phase
  - Budget for next phase
  - Next steps

Portable/Window Heat Pumps

Product Definition/Features

- Current: Self-contained, self-installed efficient heating and cooling products for small spaces
- Future: More affordable, cold climate capacity, dual-ducted, air filtration, grid enabled, and use of ultra-low GWP refrigerants

Portable/Window Heat Pumps

- **Target market:** Existing multifamily and smaller single-family homeowners and renters.
- **Possible leverage points:** DOE test procedures, CEE, ENERGY STAR, IRA funding, NYSERDA + NEEA, retail channel, multifamily and public health programs

Conceptual Logic Model – Portable Window/Heat Pumps

Current market

Barriers

- Consumer awareness
- Higher costs than separate window ACs and space heaters
- Product differentiation and testing protocol
- Need Federal voluntary and mandatory test procedures and standards (test procedures for variable speed)
- Technical challenges: cold climate, adding air filtration, condensate management, noise abatement, and use of ultra-low GWP
- Inclusion in CA utility offerings

Opportunities

- New market entrants generating manufacturer momentum in product category
- Public health and climate resilience benefits (NEIs)
- Retail product platforms, online EE marketplaces, and extra-regional partnerships
- Existing ESJ and public health programs
- Occupant self purchase, installation and ownership
- Federal test procedure in development

MTI's role

Strategic Interventions

- MANUFACTURER ENGAGEMENT
  Engage leading and extra regional partners on technical improvements including capability of air filtration, cold climate, grid ability, and use of ultra-low GWP refrigerants
- FEDERAL STANDARDS
  With partners engage federal and state test procedure and standards process for portable/window heat pumps
- RETAIL STOCKING AND PROMOTION TARGETING ESJ COMMUNITIES
  Engage ESRPP platform and online EE marketplaces on product promotions, data and possible incentives targeting ESJ heavy zip codes
- PRODUCT DIFFERENTIATION
  Engage ENERGY STAR and CEE specification to enable leverage of tax credits
- LEVERAGE CA CURRENT PROGRAMS
  Engage programs / CBOs that target ESJ consumers to build product awareness and leverage incentives
- BUILD AWARENESS
  Build awareness among consumers including key influencers like owners of multifamily buildings, public housing authorities, and renter associations

Market's response

Outcomes

- Multiple products readily available which include air filtration, cold climate capability, and use of ultra-low refrigerants
- Local EE and climate resilience programs move away from AC-only to require portable/ window heat pumps
- Increased CBO, consumer and landlord awareness and promotion
- Prices of portable/ window heat pump declines
- ENERGY STAR label exists that differentiates product
- Market share of portable/ window heat pump grows, AC and space heaters only sales decline

Impact

- Norm is to purchase a portable/window heat pump instead of backup resistance heaters and AC window units
- Federal and state procedure and standard in place for portable/window heat pumps

Barriers

Consumer awareness

Higher costs than separate window ACs and space heaters

Inclusion in CA utility offerings

Product differentiation and testing protocol

Need Federal voluntary and mandatory test procedures and standards (test procedures for variable speed)

Technical challenges: cold climate, adding air filtration, condensate management, noise abatement, and use of ultra-low GWP

Opportunities

New market entrants generating manufacturer momentum in product category

Retail product platforms, online EE marketplaces, and extra-regional partnerships

Occupant self purchase, installation and ownership

Public health and climate resilience benefits (NEIs)

Existing ESJ and public health programs

Federal test procedure in development

Strategic Interventions

MANUFACTURER ENGAGEMENT

Engage leading and extra regional partners on technical improvements including capability of air filtration, cold climate, grid ability, and use of ultra-low GWP refrigerants

RETAIL STOCKING AND PROMOTION TARGETING ESJ COMMUNITIES

Engage ESRPP platform and online EE marketplaces on product promotions, data and possible incentives targeting ESJ heavy zip codes

LEVERAGE CA CURRENT PROGRAMS

Engage programs / CBOs that target ESJ consumers to build product awareness and leverage incentives

FEDERAL STANDARDS

With partners engage federal and state test procedure and standards process for portable/window heat pumps

PRODUCT DIFFERENTIATION

Engage ENERGY STAR and CEE specification to enable leverage of tax credits

BUILD AWARENESS

Build awareness among consumers including key influencers like owners of multifamily buildings, public housing authorities, and renter associations

Outcomes

Multiple products readily available which include air filtration, cold climate capability, and use of ultra-low refrigerants

Local EE and climate resilience programs move away from AC-only to require portable/ window heat pumps

Increased CBO, consumer and landlord awareness and promotion

Prices of portable/ window heat pump declines

ENERGY STAR label exists that differentiates product

Market share of portable/ window heat pump grows, AC and space heaters only sales decline

Impact

Norm is to purchase a portable/window heat pump instead of backup resistance heaters and AC window units

Federal and state procedure and standard in place for portable/window heat pumps

External Program Review

- Emerging technology research, including CalNEXT and EPIC research
- Programs targeting affordable housing and income-qualified residents
- Online energy efficiency marketplaces and ESRPP
- National collaboration with DOE, ENERGY STAR, CEE and regional organizations

CalMTA Research Needs

- Market Characterization (inc. baseline forecast)
- Product Assessment: identify opportunities, limitations, and use cases:
  - Seasonal capacity – cooling and heating
  - Refrigerant impacts
  - Testing labeling, ratings, and product tiers
  - Connectivity and grid flexibility
  - Assess opportunities and possible impacts on IAQ
- Retail pilot using ESRPP and targeting ESJ zip codes

Proposed Phase II Budget

Section	Initial Cost Estimate
Market and Technology Research	**$410,000**
(1) Secondary Research/Sales Data Analysis	$75,000
(2) Manufacturer, Retailer and SME Interviews	$84,000
(3) Retail Store Visits and Online Shopping	$70,000
(4) Focus Groups	$120,000
(5) Customer and Building Owner Surveys	$20,000
(6) Delphi Panel	$36,000
Data Purchase	$5,000
Technology Assessment	**$443,000**
(1) Product tear down study	$110,000
(2) Technical specification and testing procedure review	$25,000
(3) Lab testing	$75,000
(4) Data analysis and modeling	$85,000
(5) Field study	$148,000
Market Pilots	**$600,000**
Retail pilot using current ESRPP	$600,000
Total	$1,453,000

Phase II Next Steps

- Develop detailed pilot scope and budget for CPUC approval
- Reach out to ESRPP for data request and pilot development
- Coordinate with external programs
- Implement research scopes
- Outreach to DOE and other external partners for possible additional leverage points
- Initial outreach to key manufacturers and other supply chain market actors

7
Advancement Plan: Induction Ranges and Cooktops
(45 minutes)

Elaine Miller

Senior Manager, Market Transformation Strategy

Induction Ranges and Cooktops

Product Definition/Features:

- Electric ranges or cooktops that use electromagnetic induction to heat cookware directly
- Future: More 24” products and more models at affordable price points

Induction Ranges and Cooktops

Target market: All residential properties with a focus on ESJ customers

Possible leverage points: Retail channel, Title 24/building codes, California Air Resources Board, ENERGY STAR, IRA funding

Conceptual Logic Model – Induction Ranges & Cooktops

Current market

Barriers

- Higher costs at energy level
- Limited electric panel capacity
- Consumer attachment to gas cooking (new way of cooking, new pots, misinformation on electromagnetic fields (EMFs), cultural acceptance with some groups)
- Technical challenges: more 24", need for backup battery, possible durability challenges, specific applications like wok and tortilla cooking, pacemakers)
- Awareness of benefits

Opportunities

- New ENERGY STAR specification
- CA decarbonization, public health, public health, federal programs
- Extensive non-energy benefits (better IAQ, faster cooking)
- Retailer platform and online EE marketplaces
- Kitchen remodel trends - largest in improvement category

MTI's role

Strategic Interventions

- MANUFACTURER ENGAGEMENT
  Engage leading manufacturers on more affordable products that meet ENERGY STAR specifications and partner with manufacturers and retailers on promotions
- LEVERAGE CURRENT PROGRAMS
  Work with current programs and IRA funding with specification for affordable induction products (Multifamily and single family)
- BUILD STOCKING PRACTICES AND TARGET TO ESJ COMMUNITIES
  Leveraging the new ENERGY STAR specification, engage ESPP platform and retailers on affordable product promotions, data and possible incentives targeting ESJ-heavy zip codes
- BUNDLE INDUCTION WITH UPGRADES TO ELECTRICAL PANELS
  Work with current programs that target electrification of ESJ communities to bundle induction purchase with electrical panel upgrades
- CHANGE PUBLIC OPINION AND BUILD AWARENESS
  Build and deploy consumer campaign for induction through current programs, CBOs, local governments and manufacturer partnerships – focus on superior cooking and health benefits and key tool to help with electrification
- STATE & FEDERAL STANDARDS Collaborate with other organizations on possible state (CARB) and federal standards
- CODE
  Support CA allies on encouraging adoption of induction stoves into CA code for new single family and multifamily homes
- PRODUCT DIFFERENTIATION
  Engage ENERGY STAR specification on future, improved version of 2.0 specification

Market's response

Outcomes

- More induction models meet a similar price point as gas or resistance electric models
- Programs in CA promote more affordable induction models coupled with IRA funding
- Retailers and midstream market actors (builders, designers, CBOs) all prioritize and promote induction as superior cooking appliance
- Market share of induction stoves grows
- Increasing number of local decarbonization policies in new construction
- ENERGY STAR specifications ratchet up in V2.0
- Induction stove acceptance as gateway to full home decarbonization

Impact

By 2035, induction stoves are the norm in both new construction and existing single and multifamily homes and serve to increase public acceptance of all electric residential homes. All new homes in CA are built with induction ranges and 70% of all stoves and cooktops sold in CA include induction technology

Barriers

Higher costs at energy level

Limited electric panel capacity

Consumer attachment to gas cooking (new way of cooking, new pots, misinformation on electromagnetic fields (EMFs), cultural acceptance with some groups)

Technical challenges: more 24”, need for backup battery, possible durability challenges, specific applications like wok and tortilla cooking, pacemakers)

Awareness of benefits

Opportunities

New ENERGY STAR specification

CA decarbonization, public health, public health, federal programs

Extensive non-energy benefits (better IAQ, faster cooking)

Retailer platform and online EE marketplaces

Kitchen remodel trends - largest in improvement category

Strategic Interventions

MANUFACTURER ENGAGEMENT
Engage leading manufacturers on more affordable products that meet ENERGY STAR specifications and partner with manufacturers and retailers on promotions

BUILD STOCKING PRACTICES AND TARGET TO ESJ COMMUNITIES
Leveraging the new ENERGY STAR specification, engage ESPP platform and retailers on affordable product promotions, data and possible incentives targeting ESJ-heavy zip codes

CHANGE PUBLIC OPINION AND BUILD AWARENESS
Build and deploy consumer campaign for induction through current programs, CBOs, local governments and manufacturer partnerships – focus on superior cooking and health benefits and key tool to help with electrification

CODE
Support CA allies on encouraging adoption of induction stoves into CA code for new single family and multifamily homes

LEVERAGE CURRENT PROGRAMS
Work with current programs and IRA funding with specification for affordable induction products (Multifamily and single family)

BUNDLE INDUCTION WITH UPGRADES TO ELECTRICAL PANELS
Work with current programs that target electrification of ESJ communities to bundle induction purchase with electrical panel upgrades

STATE & FEDERAL STANDARDS
Collaborate with other organizations on possible state (CARB) and federal standards

PRODUCT DIFFERENTIATION
Engage ENERGY STAR specification on future, improved version of 2.0 specification

Outcomes

More induction models meet a similar price point as gas or resistance electric models

Programs in CA promote more affordable induction models coupled with IRA funding

Retailers and midstream market actors (builders, designers, CBOs) all prioritize and promote induction as superior cooking appliance

Market share of induction stoves grows

Increasing number of local decarbonization policies in new construction

ENERGY STAR specifications ratchet up in V2.0

Induction stove acceptance as gateway to full home decarbonization

Impacts

By 2035, induction stoves are the norm in both new construction and existing single and multifamily homes and serve to increase public acceptance of all electric residential homes.

All new homes in CA are built with induction ranges and 70% of all stoves and cooktops sold in CA include induction technology.

External Program Review

- Emerging technology research, including CalNEXT
- Statewide all-electric new construction programs
- Programs targeting affordable housing and income-qualified residents
- Local utility education / cooktop loaner programs
- Online energy efficiency marketplaces and the ESRPP
- National collaboration with DOE, ENERGY STAR, and CEE

CalMTA Research Needs

- Characterize the market (inc. baseline forecast)
- Identify socio-cultural connections and interventions
- Opportunities for technology advancement/ improvement
  - Drop-in replacement/120V induction products
  - Performance ratings and standards
  - Product durability and efficiency
  - IAQ and ventilation efficiency
  - Gas/electric infrastructure impacts
- Pilots
  - Retail pilot using ESRPP and targeting ESJ zip codes
  - Engage CBOs to investigate ESJ strategies/messaging

Proposed Phase II Budget

Section	Cost Estimate
Market and Technology Research	**$493,000**
(1) Secondary Research	$85,000
(2) Builder and Remodeler Interviews	$42,000
(3) Manufacturer or SME Interviews	$75,000
(4) Focus Groups	$120,000
(5) Customer and Building Owner Surveys	$130,000
(6) Delphi Panel	$36,000
(7) Data Purchase	$5,000
Technology Assessment	**$302,000**
(1) Product Evaluation and Component Analysis Study	$110,000
(2) Data Analysis and Modeling	$85,000
(3) Field Tests and Energy Use Analyses	$107,000
Market Pilots	**$1,040,000**
Market Pilot 1) ESRPP Retail Pilot	$600,000
Market Pilot 2) CBO Partnership	$540,000
Total	$1,835,000

Phase II Next Steps

- Develop pilot scope and budget for CPUC approval
- Reach out to ESRPP re data request and pilot development
- Coordinate with external programs
- Implement research scopes
- Outreach to external partners and possible leverage points
- Initial outreach to key manufacturers and other supply chain market actors

Lunch break (50 min)
We will be back soon.

8
Advancement Plan: Efficient Rooftop Units

(45 minutes)

Alexis Allan

Senior Advisor, Market Transformation

Efficient Rooftop HVAC

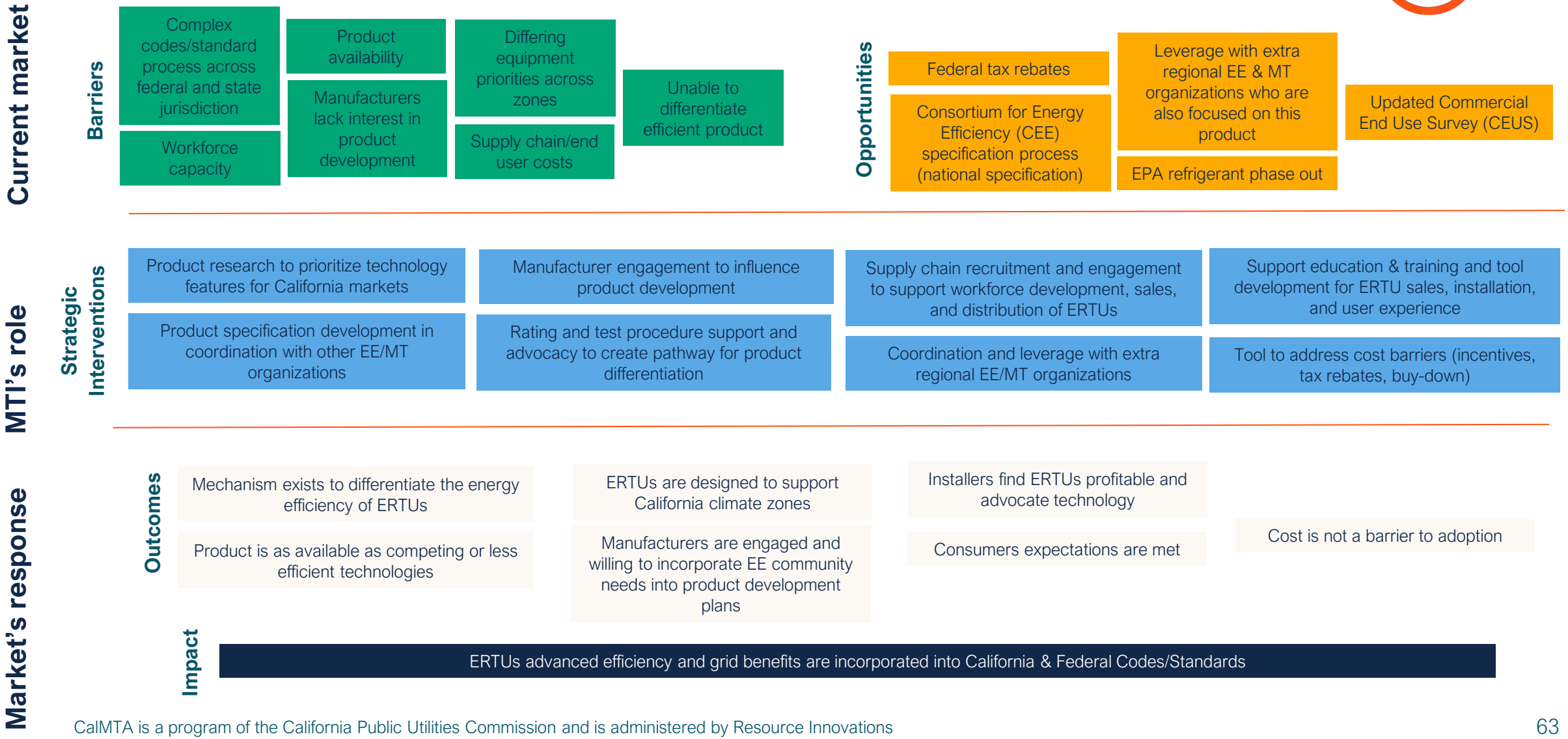
Product Definition/Features:

- Forced-air systems that package evaporator, condenser coils, fans, and heating components into a single unit
- Components that enable this system to save energy include:
  - Insulated RTU box (to R-12)
  - Low leakage dampers and improved economizer design
  - Increased HP efficiency through sizing or variable speed
  - Use of energy or heat recovery (E/HRV)
  - Controls

Efficient Rooftop HVAC

- **Target market:** Small- to mid-sized commercial properties
- **Possible leverage points:** CalNEXT, CASE, DOE, ENERGY STAR, CEE, MT organizations, ASHRAE, AHRI

Conceptual Logic Model – Efficient Rooftop Units (ERTUs)



Barriers

Complex codes/standard process across federal and state jurisdiction

Workforce capacity

Product availability

Manufacturers lack interest in product development

Differing equipment priorities across zones

Supply chain/end user costs

Unable to differentiate efficient product

Opportunities

Federal tax rebates

EPA refrigerant phase out

Leverage with extra regional EE & MT organizations who are also focused on this product

Consortium for Energy Efficiency (CEE) specification process (national specification)

Updated Commercial End Use Survey (CEUS)

Strategic Interventions

Product research to prioritize technology features for California markets

Manufacturer engagement to influence product development

Supply chain recruitment and engagement to support workforce development, sales, and distribution of ERTUs

Support education & training and tool development for ERTU sales, installation, and user experience

Product specification development in coordination with other EE/MT organizations

Rating and test procedure support and advocacy to create pathway for product differentiation

Coordination and leverage with extra regional EE/MT organizations

Tool to address cost barriers (incentives, tax rebates, buy-down)

Outcomes

Mechanism exists to differentiate the energy efficiency of ERTUs

ERTUs are designed to support California climate zones

Manufacturers are engaged and willing to incorporate EE community needs into product development plans

Consumers expectations are met

Product is as available as competing or less efficient technologies

Installers find ERTUs profitable and advocate technology

Cost is not a barrier to adoption

Impacts

ERTUs advanced efficiency and grid benefits are incorporated into California & Federal Codes/Standards

External Program Review

- Emerging technology research, including CalNEXT
- Investor-owned utilities programs (e.g., PG&E HVAC Upgrade incentives)
- California Energy Codes and Standards (CASE)
- NEEA, Center for Energy & Environment, Consortium for Energy Efficiency

CalMTA Research Needs

- Technical assessment of product components
- Characterize market including development of market baseline forecast
- Characterize RTU stock and current experience
- Characterize purchase decision-making
- Cost analysis and assessment
- Workforce development pilot

Proposed Phase II Budget

Section	Cost Estimate
Market and Technology Research	**$325,000**
(1) Secondary Research	$52,000
(2) Decision Maker Interviews/Surveys	$54,000
(3) Manufacturer or SME Interviews	$39,000
(4) Distributor/Contractor Interviews/Surveys	$70,000
(5) Delphi Panel	$35,000
(6) Data Purchase	$75,000
Technology Assessment	**$781,000**
(1) Technical Potential Assessment	$40,000
(2) Impact and Benefit Analysis of features/control strategies	$70,000
(3) Laboratory Testing (up to three units)	$315,000
(4) Real world Performance Field Study (assumes ability to leverage CalNEXT and other ERTU pilots for cost-share)	$356,000
Market Pilots	**$1,135,000**
(1) Pilot Design	$150,000
(2) Pilot Implementation	$760,000
(3) Pilot Assessment	$225,000
Total	$2,241,000

Phase II Next Steps

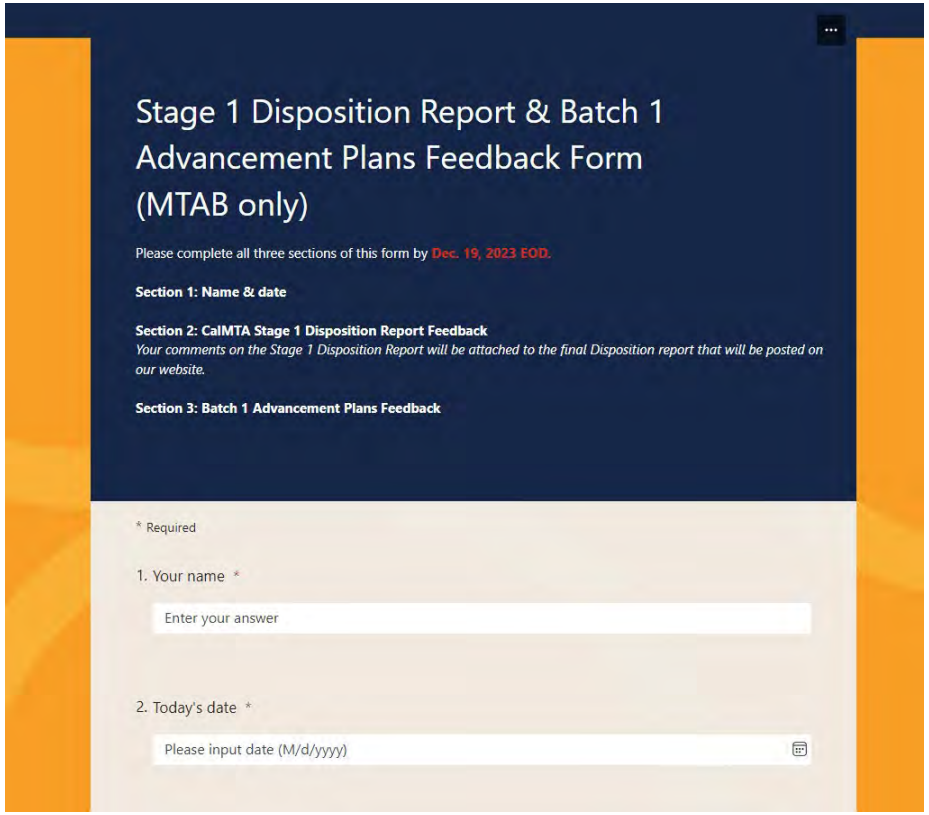
- Develop pilot scope and budget for CPUC approval
- Coordinate with external programs
- Implement research scopes
- Outreach to DOE, NEEA, ASHRAE, CEE and other external partners for possible leverage points
- Initial outreach to key manufacturers and other supply chain market actors

MTAB Feedback form

Feedback form will be emailed to you on Dec. 5 and due back **Dec. 20 by EOD.**

The form will be used to gather comments on:

- Draft Stage 1 Disposition report - *Comments from the Disposition report section will be attached to the final report and posted on CalMTA.org*
- Batch 1 Advancement Plans



9
Future MTAB Meetings & Topics

MTAB Topics

2024		
January 25 In person 9am - 5pm	April Virtual date/time TBD	June In person date/time TBD

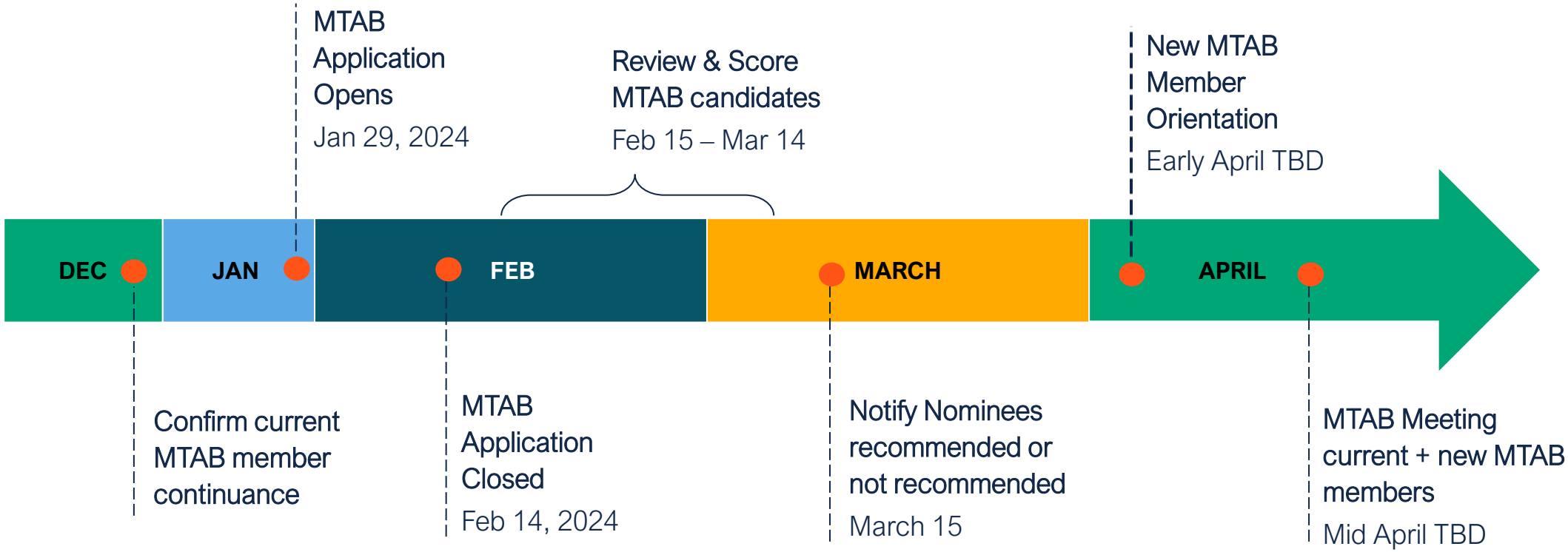
• Batch 1:
  • Comment summary
  • Pilot Work Plans/Budgets
• Batch 2 Recommendation Memo
• Final MTI Evaluation Framework
	• Batch 1 progress report
	• Draft MTI Plan template
	• RFI update
		• Draft 2025 ABAL
		• Draft Disposition Report Phase I
		• Batch 2 Draft Advancement Plans

10
MTAB Recruitment Schedule

Stacey Hobart

Principal, Stakeholder Engagement & Communications

MTAB Recruitment Schedule



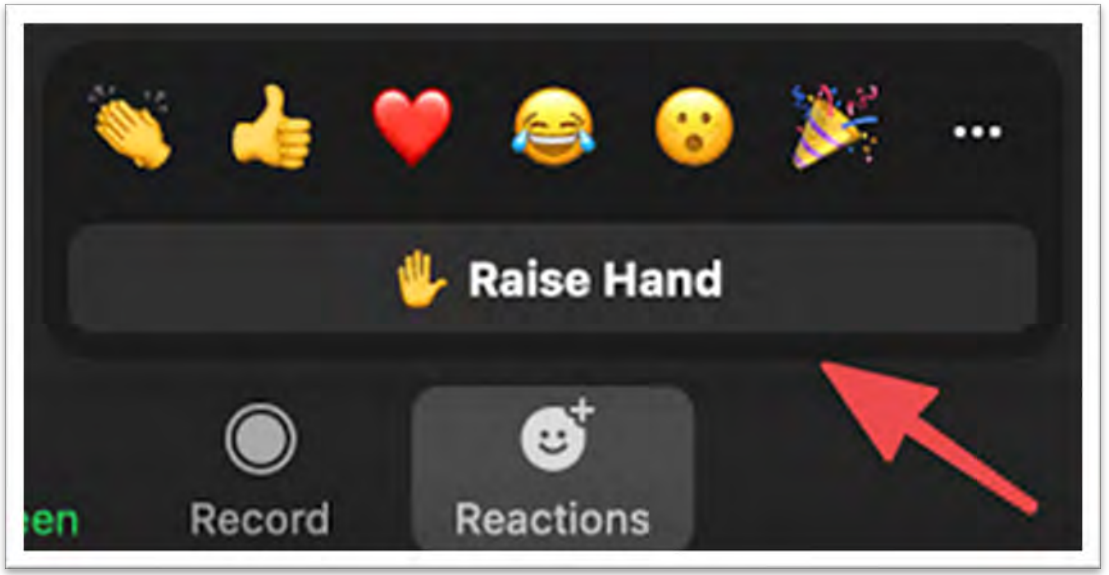
MTAB Member Terms

MTAB Member	Term Ending	Category Represented
Cyane Dandridge	4/14/2025	Workforce and/or Labor
Fred Gordon	4/14/2024	Evaluation Professional
Hayley Goodson	4/14/2024	Ratepayer Advocacy/Protection
Jeff Harris	4/14/2025	National/Regional EE Policy Professional
Ky-An Tran	4/14/2025	Ratepayer Advocacy/Protection
Lujuana Medina *	4/14/2024	CCAs/RENs
Peter Miller	4/14/2024	Environmental Advocacy
Randall Higa *	4/14/2025	IOU

*CCAs/REN representative &*IOU representative – replacement selected by agreement of the respective parties.

Public Comment

Raise your hand using the “Reactions” feature and we will allow you to unmute yourself.



CalMTA

Thank you for attending!
See upcoming meetings & events at calmta.org